Main Library
LIBRARY
RECEIVED
★ JUL 5 - 1932 ★
U. S. Department of Agriculture

THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

Volume XVI Number 10

July 1, 1932

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XVI July 1, 1932 Number 10

THE 1932 FLAG SMUT SURVEY

Compiled by

P. R. Miller and L. R. Fate

A survey for wheat flag smut (Urocystis tritici) was made during May and June in Illinois, Missouri, Kansas, and Oklahoma. Those who took part in the survey are J. A. Faris, C. M. Tucker, I. T. Scott, C. H. Ficke, the county agricultural agents of the counties visited, and the compilers. The results are given in the following statements and accompanying maps.

ILLINOIS

A survey for the purpose of determining the severity and extent of flag smut in Illinois was made from May 24 to June 2.

As the result of past surveys, flag smut has been reported from the following seven Counties: Monroe, St. Clair, Madison, Macoupin, Green, Scott, Jersey, Hancock, and Logan.

Fields of the above Counties were examined as well as fields in seven neighboring Counties. A trace of flag smut was found in Logan, Hancock, Green, Madison, and St. Clair Counties. A few affected plants were found in one field in Macon County, the only new County to be added to the list.

Of the 158 fields examined 9 were found to be infected.

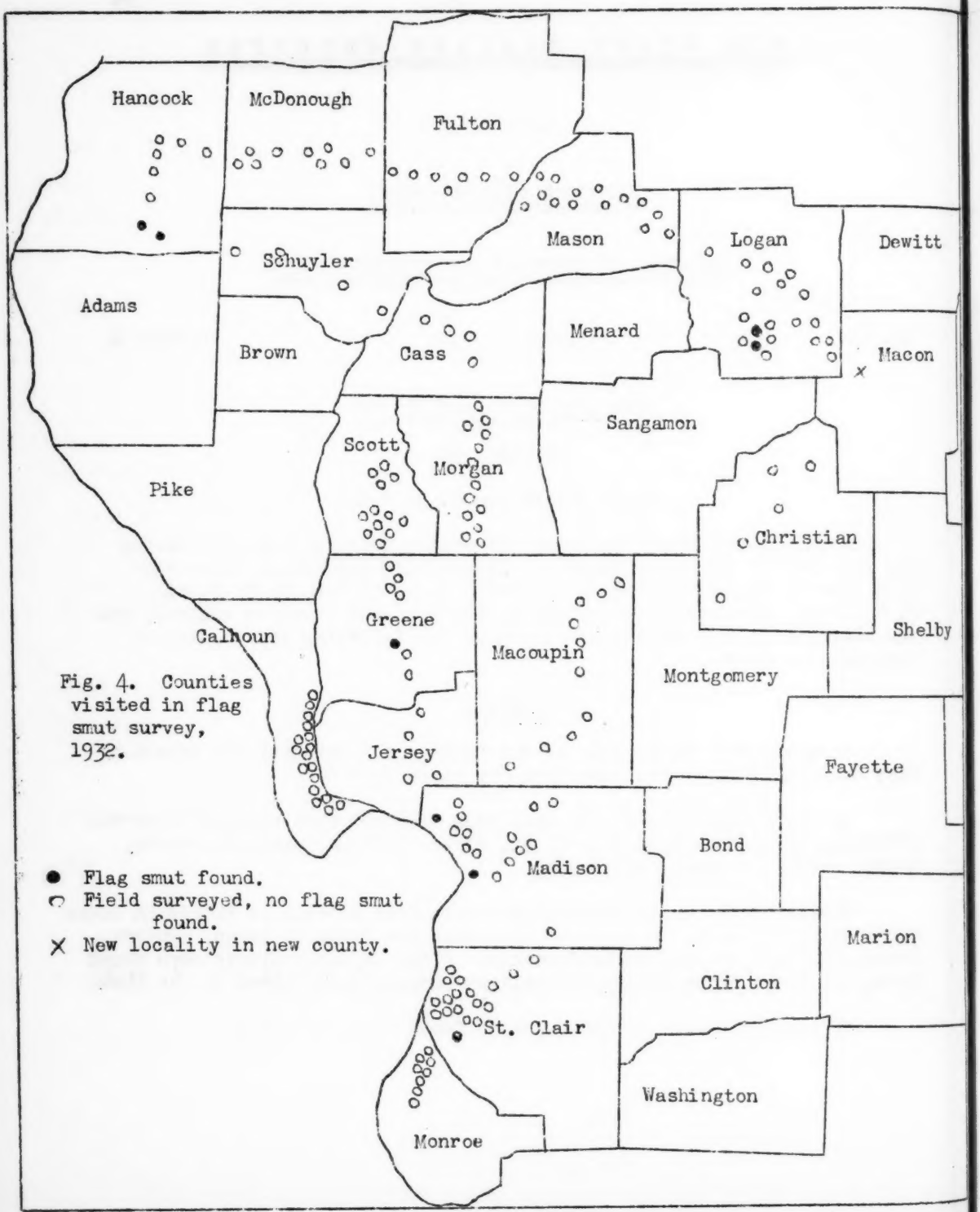

Fig. 4. Counties visited in flag smut survey, 1932.

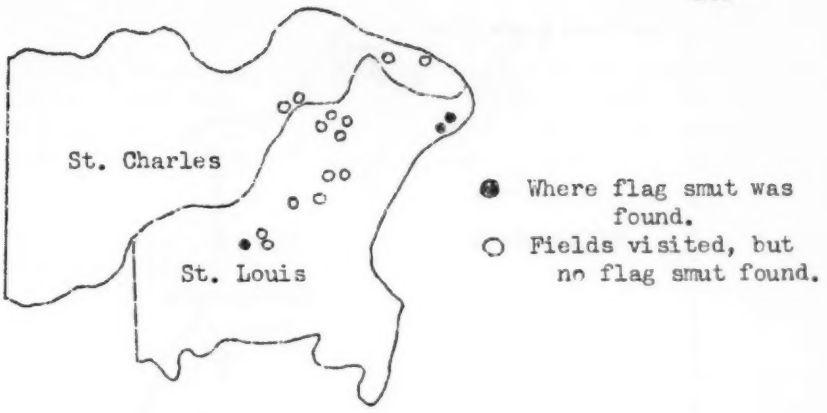

Fig. 5. Map showing fields visited in the flag smut survey in St. Charles and St. Louis Counties, Missouri.

MISSOURI

Seventeen fields were examined in St. Charles and St. Louis Counties. Flag smut was found in three fields in St. Louis County. The amount of infection in all cases was slight and was in localities where it had been previously reported.

Rains prevented an extensive survey in Andrew, Buchanan and Platte Counties. On June 9 and 10, twenty fields were visited. No flag smut was found.

KANSAS

About 75 fields of soft winter wheat in Cowley and Sumner Counties. were visited during the period May 8 to May 20, inclusive. No flag smut was found.

The last week of May was spent in Leavenworth and Wyandotte Counties. Flag smut was found in 16 fields in Leavenworth. All but one of these fields are in areas known to have been infected for several years. Of the 16 fields 6 were Harvest Queen, 4 were Fultz, 4 were Michigan Wonder, and 2 were mixtures of two or more varieties.

Flag smut was located in four fields of Harvest Queen in Wyandotte County three miles East and one-half mile South of Wallula. It is quite evident that the disease has been in this location several years.

In a two-day survey through Atchison, Brown and Doniphan Counties no flag smut was found.

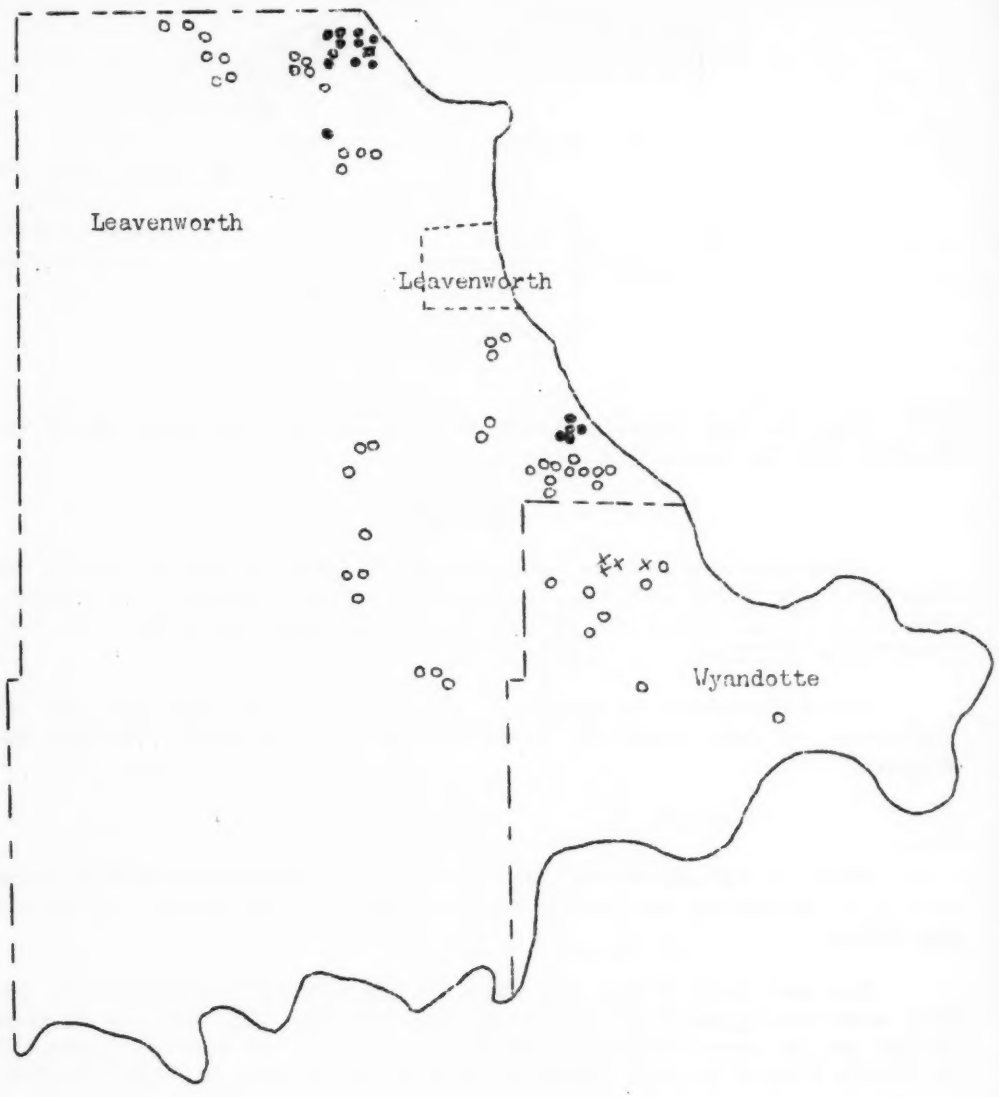

Fig. 6. Distribution of flag smut in Leavenworth and Wyandotte Counties, Kansas. 1932.

o Field visited, no flag smut.
● Flag smut present
X Flag smut - not previously reported in this location.
■ Experimental plots.

While no fields were found with as high infections as in some previous years several cases were found where infections averaged between five and ten per cent. Harvest Queen continued to be the most susceptible variety and farmers are rapidly changing from this to the less susceptible Michigan Wonder.

Location of all fields visited are recorded on county maps filed in the office of Plant Disease Survey.

OKLAHOMA

The soft winter wheat area of Kay and Noble Counties, Oklahoma, was surveyed but no flag smut was found in the 190 fields visited. County maps with locations visited are filed in the office of Plant Disease Survey and the Kansas State Experiment Station.

DISEASES OF SPECIAL CROPS

TOBACCO DOWNY MILDEW APPEARS IN PENNSYLVANIA

On June 15, R. S. Kirby found downy mildew of tobacco (Peronospora hyoscyami) in two of the three seed beds on one farm one and a half miles north of Bareville, Lancaster County, Pennsylvania. In one of the affected beds from 2 to 20 per cent of the plants showed mildew which was most severe under a pile of window sash covering one portion of the bed. In the other bed only a few plants were infected, also mostly under window sash.

This is the first appearance of the disease in tobacco sections north of Maryland. Planting is so far advanced in Lancaster County that there is not likely to be much damage to seed beds there.

VEGETABLE DISEASES

BACTERIAL SPOT OF TOMATO FOUND IN ARKANSAS

A tomato fruit affected by bacterial spot was received June 14 from V. H. Young with the statement that Earliana tomatoes at the Rice Branch Experiment Station at Stuttgart, Arkansas, were being severely injured whereas Marglobe was only slightly affected. The diagnosis of the cause as Bacterium vesicatorium was verified by Miss M. K. Bryan. This is the first report from Arkansas.

DISEASES IN THE EARLY POTATO CROP IN MARYLAND

It is estimated that losses from the brown sprout disease caused by Rhizoctonia solani will be approximately 20 per cent of the crop in Worcester County this year. A careful study of this condition indicates that the disease was primarily induced by injury to the sprouts as they came through the soil, by coming in contact with commercial fertilizer placed above the seed pieces when they were planted. In fields where the fertilizer was mixed well with the soil before planting there was much less injury from brown sprout.

Losses from virus diseases will be very slight this year, less than one per cent of the crop. This condition is due to the unceasing efforts of the County Agent and Extension Specialist to induce the growers to use certified seed. Most of the Worcester County growers are now using either northern grown or home grown certified seed. In a few fields where uncertified home grown seed was used, twenty per cent of the plants had leaf roll and five per cent had rugose mosaic. (R. A. Jehle, June 21).

DISEASES OF CEREALS AND GRASSES

OUTBREAK OF BACTERIAL WILT ON SWEET CORN IN OHIO

A. L. Pierstorff contributes the following report (June 21):

"An unusually severe outbreak of Stewart's disease (Aplanobacter stewartii) is occurring on sweet corn. It appears that many of the larger seed houses in Ohio sold infected seed which was disseminated widely to our market gardeners. Even seed which was recommended as being disease-free by other state pathologists was found to contain considerable bacterial wilt when planted in Ohio. It is possible that Stewart's disease does not exhibit typical symptoms in some of our northern states, but that the disease is present nevertheless. The possibility of soil infection was eliminated from a number of our fields inasmuch as the corn was planted on new ground.

"In infected plants, the mesocotyl is usually shriveled and brown on the interior. The browning together with the appearance of a soft rot occurs in the base of the stalk. This symptom usually is not attributed to Stewart's disease, but isolations in our laboratory and by Dr. Benjamin Koehler at Illinois, indicate that Bacterium stewartii is the organism responsible for this rotting. At least it causes conditions favorable for such rot.

"In Ohio the production of hybrid corn resistant to Stewart's disease will have to be expanded to meet the needs of our market gardeners."

CEREAL DISEASES IN ARKANSAS

Oats seem to be affected rather severely with smut (Ustilago spp.), including both types, and less severely with leaf rust (Puccinia coronata). Wheat is damaged to a considerable extent by loose smut (Ustilago tritici) and somewhat by leaf rust (Puccinia triticina). Covered smut (Tilletia sp.) does not appear to be common. (V. H. Young, June 11)

SCLEROTIUM DISEASE OF GRASS IN MASSACHUSETTS

W. H. Davis reports (June 17) that "In December 1931 and during January to June this year, Sclerotium rhizodes was isolated from grasses, turf, lawn, and meadows in the Connecticut Valley in Massachusetts. It caused considerable injury to lawns and turf during the spring."

F R U I T D I S E A S E S

FURTHER REPORTS ON BLIGHT (BACILLUS AMYLOVORUS) OF APPLE AND PEAR

Results of some preliminary tests in Ohio on the dissemination of the blight organism by means of bee hives are reported by A. L. Pierstorff as follows: (June 21).

"Some of our preliminary results on the possibility of bees disseminating blight might be of interest. In southern Ohio two Yellow Transparent trees were caged with cheesecloth. Beneath tree number 2, a hive of bees was placed in which the comb had been inoculated with blight bouillon two days previous to the opening of any blossoms. A second hive was placed under tree number 1 and 19 blossom clusters were inoculated when the center bud opened. Not a single blighted blossom was found under tree number 2. On tree number 1, all inoculated blossom clusters were blighted and 131 additional blossoms. Seventy-four blossom clusters were not blighted and 9 of them had set fruit.

"These two colonies of bees were transferred to Columbus and placed beneath two caged trees of Grimes Golden. The comb-inoculated tree did not show a single blossom blighted. The hive which was taken from the blossom-inoculated tree in southern Ohio showed one blighted blossom. This, however, may have been accidental inasmuch as this cage was not entirely bee tight and a number of bees escaped. Blossom blight was prevalent in the orchard outside of the cage immediately adjacent to it.

"In northern Ohio this test was duplicated. Again the blossom-inoculated tree showed a good deal of spread from blight, while the comb-

inoculated tree showed only 6 blossoms blighted. This test in northern Ohio was not an ideal arrangement inasmuch as the two hives were placed beneath one tree with a cheesecloth partition dividing the vase-shaped tree in half. The possibility of contamination from the blossom-inoculated side was present.

"In a preliminary way these tests show that the bee hive is not a very great source of blight contamination in an orchard. This work is to be continued."

Some additional reports follow:

Pennsylvania: Last week I was in northeastern Pennsylvania and saw a very heavy infestation of blight. (George L. Zundel, June 21).

Maryland: Blight is more severe than usual this year and twigs in many apple orchards have been severely blighted. Dr. J. B. S. Norton reports severe injury from pear blight in an orchard in Kent County. (R. A. Jehle, June 21).

REPORTS ON APPLE SCAB (VENTURIA INAEQUALIS)

Massachusetts: Although spores matured unusually early this spring, discharge from old leaves was greatly delayed by dry weather. Infection periods occurred on the following dates: May 1, with low elevation orchards in late delayed dormant buds, resulting in very light infection of the earlier orchards only; May 6 to 7, after most orchards had received the pre-pink spray, resulting in marked infection where the pre-pink spray was not on; and May 26 to 27, after most of the orchards had received the calyx spray. Generally, ascospores were not all discharged until around June 6. Growers have had better opportunity to protect trees against scab this spring than in several years past, and should experience little difficulty in securing a clean crop. First infection was observed May 19. (O. C. Boyd, June 15).

New York: Reports given in the State College of Agriculture Departments of Entomology and Plant Pathology Weekly News Letter for June 13 indicate that scab is not severe in orchards that have been well sprayed but that it is abundant in unsprayed or poorly sprayed ones.

Pennsylvania: There was a light infection of apple scab during the delayed dormant period, first observed on May 9. A moderate infection occurred during the pre-pink period and a very heavy infection during the blossom period which coincided in

part with the rains of May 8 to May 13. As high as 80 per cent of the apples of the susceptible varieties in unsprayed orchards were found to be infected. (R.S.Kirby)

Maryland: Scab has been controlled only in orchards which were thoroughly sprayed at the time recommended by the spray service. On the eastern shore, scab is very prevalent on leaves and young fruit in orchards which were not thoroughly sprayed or in which equipment was inadequate to spray the orchards in less than three or four days. Mr. C. Graham reports severe injury from scab in similar orchards in the western part of the state. (R. A. Jehle, June 21).

Arkansas: Apple scab seems to be of slight importance this year probably due to the fact that the weather was dry during April and most of May. (V. H. Young, June 11).

Ohio: There will be more apple scab on Ohio apples this fall than was present last year. In practically every section of the state a two to four day rain occurred at a very critical time and many growers were unable to complete their spray before the rain set in. In Southern Ohio all apple varieties were showing green and an excellent infection period occurred from April 7 to 11. The Rome Beauty, which comprises more than 40 per cent of southern Ohio apple crop, was pre-pink and also was not sprayed in the majority of orchards. In central Ohio, this variety was not showing green, but early varieties, like Stayman and Delicious, were in the delayed dormant stage. From 25 to 35 per cent of the apple scab perithecia contained mature spores, many of which were discharged during this rain period. To date this is the only infection period that southern Ohio has had. In central Ohio the second infection period occurred from May 9 to 12. The weather from May 5 to 8 was very warm and most varieties came into bloom throughout central Ohio. During the rain which started on Monday the 9th most varieties were in the late blossoming period and considerable growth had taken place since the pink spray. In northern Ohio this same rain period occurred in the pre-pink period and growth was so rapid at that time that it was impossible for many growers to keep their orchards adequately covered. Those growers who are equipped to spray their orchards in 48 hours were successful in covering their foliage preceding this infection period.

Last week in northern Ohio it was interesting to note that where growers had applied their pre-blossom spray just

preceding this infection period no scab occurred. Where the varieties were sprayed early or had received no preblossom spray, scab is generally present on the blossom cluster leaves, even on relatively resistant varieties like Baldwin. Also, this was an excellent rain to test the comparative value of the milder sulfur sprays as compared with lime-sulfur. Even the best of our mild sulfur sprays were not equal to the task of preventing scab infection during this four-day rain. Dusts were also inadequate. (A. L. Pierstorff, June 21).

CEDAR RUST (GYMNOSPORANGIUM SPP.)

Maine: The quince rust, Gymnosporangium germinale, was abundant May 20 on Juniperus communis depressa at Orono, Mt. Desert Island, and North Sedgwick. Probably general. (F. H. Steinmetz).

Massachusetts: The telia of G. juniperi-virginianae were more abundant this year than usual. First noted April 8. Abundant on May 30 directly after a rain. May was an unusually dry month. (W. H. Davis, June 17).

Pennsylvania: During the rainy period, May 8 to May 13, there was very heavy extrusion of spore horns of apple rust, G. juniperi-virginianae, on cedars in Adams, Montgomery, and Juniata Counties. G. germinale was also observed in several counties in southeastern Pennsylvania. (R. S. Kirby)

Virginia: I just recently made a survey trip through the northern part of the state, and I noted several small cedar rust infections on the fruits as well as the leaves. I should judge that these were apparent at least a week before I first saw them, which was on June 11. (A. B. Groves, June 14).

Arkansas: Cedar rust seems to be of slight importance. (V. H. Young, June 11).

Wisconsin: First discharge of rust spores from gelatinous spore horns on red cedar at Madison. (R. E. Vaughan, April 29).

FROG-EYE LEAF SPOT (PHYSALOSPORA MALORUM)

Massachusetts: The frog-eye leaf spot is very heavy generally in back-yard and otherwise poorly cared for trees this year, and unusually prominent in commercial orchards, particularly on Baldwin. Apparently, the rainy period of May 6 to 7, coming

before the pink bud stage, favored primary infection, for the disease is decidedly most severe in trees that did not receive a pre-pink fungicide. Leaf spots were first observed around May 18 to 20, the same date of first appearance as scab. (O. C. Boyd, June 15).

New York: Dutchess County.
Frog-eye leaf spot observed on young Cortland trees. June 6. Frog-eye leaf spot much more plentiful than last year on Baldwins. June 13. (J. A. Evans, State College of Agriculture Weekly News Letter).

UNUSUAL LATE INFECTIONS OF PEACH LEAF CURL

M. B. Waite

The spores of Exoascus deformans, the peach leaf curl fungus, are supposed to lodge in the buds in late spring and early summer and to rest among the hairs in the bud scales during the winter, ready to germinate and infect the very young new leaves when the buds are swelling. Repeated experience has shown, ever since Pierce's work in California[1] and Selby's work in Ohio[2] that any good fungicide - either the copper or the sulfur sprays, and even the soluble copper sulphate - when sprayed during the dormant season will kill these spores and prevent infection. Based on Michigan experience, Professor Taft has advised spraying six weeks before the buds swell. In the Great Lakes States dormancy of the leaf buds and the period when they swell are very definite. South of the Mason and Dixon line this period is much less definite, and leaf buds often begin to swell slightly considerably ahead of the blossoming time. Apparently in the southern sections peach leaf curl is controlled by spraying closer to the date of swelling, and even after the leaf buds have begun to swell slightly.

As the result of correspondence with Mr. G. C. Starcher concerning late infection in the Fugazzi peach orchard at Fort Payne, Alabama, and at his request, Mr. M. M. Hester, orchard manager, sent on June 14 specimens of peach twigs with leaves attached showing a remarkable case of late infection of peach leaf curl. Mr. Starcher had previously sent me on June 2 typical severe early infections of peach leaf curl, in which the first leaves out and the twigs had been very severely attacked. The diseased leaves were blackened and over-mature. The later specimens collected on June 14 consisted of twigs often slightly more than a foot long, bearing from 7 to 11 sound leaves and 3 to 4 tip leaves rather severely infected. The galls were quite

---

[1] Pierce, N. B. Peach Leaf Curl: Its Nature and Treatment. U. S. D. A. Div. Veg. Phys. and Path. Bul. 20: 22-30. 1900.

[2] Selby, A. D. Further Studies Upon Spraying Peach Trees and Upon Diseases of the Peach. Ohio Agr. Exp. Sta. Bul. 104. 1899.

young, many of them yellow or reddish, and sporulating, but the youngest leaves on several of these twigs showed very young immature infections just beginning to yellow and expand. There were all stages between. This material is certainly the most remarkably atypical that I have ever seen or heard of. Probably most plant pathologists have observed that in some cases of peach leaf curl the first leaves out, that is, the basal leaves, are not always attacked; but the second to fourth leaves, or even higher up, may be severely infected, and occasionally a stray spot occurs on later leaves. I am sure the impression is prevalent that there is an initial spring infection of the leaves by this fungus, whether severe or mild, and that later no further infection occurs. This is certainly the usual experience. Mr. Starcher was informed of this, and while the correspondence was going on, evidently this violent second infection took place, and he came back with these remarkable specimens collected on June 14. He states that this second infection, which he is inclined to think is a secondary, appeared during the first two weeks of June, and was fifty to a hundred times as severe as the first. No doubt infections took place during the latter half of May. The variety was evidently Elberta or Hale, said to be the one most seriously affected.

While this looks like a very severe case of secondary infection of peach leaf curl, I am not sure that the life history of this fungus is sufficiently elastic to permit a second generation in one year. Mix[3] has shown that it can be successfully inoculated into the peach by means of conidia from cultures. It occurs to me that this might be a case of delayed dormancy of the fungus. Since the flowering plants, especially peach trees and other northern plants, were so badly mixed up by the lack of low temperatures in the southern states during the past winter, may it not be possible that this fungus did not experience enough cold to get it ready for spring germination? The spots were peppered over the leaves just like any other wind-blown fungus such as apple scab or cedar rust.

At any rate, this interesting case shows that we need more information about the peach leaf curl fungus. Photographs were made and specimens deposited in the herbarium in Mycological Collections.

ADDITIONAL REPORTS ON PEACH LEAF CURL

Pennsylvania:

This season has seen an unusual epidemic of peach leaf curl, far the worst that has occurred during the last eight years. (R. S. Kirby.)

Ohio:

An unprecedented attack of peach leaf curl occurred this spring. The bud scales were broken in February and many complaints have reached

---

[3] Mix, A. J. Biological and cultural studies of Exoascus deformans. Phytopathology 14: 217-233. 1924.

us regarding the failure of sprays to control curl adequately. Check up reveals the fact that where the peaches were sprayed while dormant, curl was adequately controlled. Many examples occur in the state where growers omitted spraying one or two trees, which were in the house yard, or hard to reach, and these have been uniformly infected with curl. This severe attack by curl will undoubtedly encourage growers to do fall spraying. (A. L. Pierstorff, June 21).

MISCELLANEOUS REPORTS ON FRUIT DISEASES

BROWN ROT BLOSSOM BLIGHT OF PEACH IN PENNSYLVANIA: Blossom blight of peach due to brown rot (Sclerotinia fructicola) was much less severe this year than in 1930 or 1931, even in uncultivated orchards it usually ranged from about 3 to 5 per cent, while 25 per cent was noted in one orchard. (R. S. Kirby).

GRAPE DISEASE IN ARKANSAS: There is much less black rot (Guignardia bidwellii) than is usually the case at this time and downy mildew (Plasmopara viticola) has not been seen. The weather was dry during April and most of May. (V. H. Young, June 11).

STRAWBERRY LEAF SPOT IN ARKANSAS: Early in the season we had reports of considerable injury to strawberries from the strawberry leaf spot (Mycosphaerella fragariae). Ordinarily I do not believe this disease is of much importance in the State but when winters are unusually open it appears to develop practically all winter long and seems to be of some importance, especially on certain varieties. (V. H. Young, June 11).

SOME SPECIMENS RECEIVED

Myxomycete (? Physarum sp.) on sweet potato, T. W. Turner, Hampton Institute, Virginia, June 15; said to be very troublesome in seed beds this spring. Determined by J. A. Stevenson, who says it has been abundant this year because of excessive moisture.

Ustilago bromivora on Bromus unioloides, Bell County, Texas, S. E. Wolff, May 5. Det. G. L. Zundel. First report of brome smut for Texas.

Ustilago residua on Danthonia spicata, Shingletown Gap, Centre County, Pennsylvania, June 16, det. G. L. Zundel.

Verticillium albo-atrum causing wilt of snapdragon, Bangor, Maine, Florence L. Markin, May 8.